

Amendments to the Claims

This Listing of Claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1-23. (Canceled)

24. (Currently Amended) A process for selectively removing isobutene and butadiene from an olefinic stream further comprising linear butenes, the process comprising:

(a) providing an initial C₄ olefin stream produced by steam cracking, fluid catalytic cracking, catalytic naphtha cracking or conversion of methanol to olefins;

(a) (b) contacting said olefinic stream comprising from about 0.1 wt% to about 35 wt% of isobutene, from about 0.01 wt% to about 80 wt% of butadiene, and linear butenes including 1-butene under hydrogenation conditions with a hydrogenation catalyst to selectively hydrogenate butadiene in the olefinic stream, and thereafter

(b) (c) contacting the olefinic stream after step (a) (b) under oligomerization conditions with an oligomerization catalyst to selectively oligomerize isobutene in the olefinic stream to butene oligomers which are dimers or trimers; and thereafter

(e) (d) sending the olefinic stream after step (b) (c) to a C₄ recovery section and recovering a linear butenes butene stream enhanced in 1-butene purity compared to said initial C₄ olefin stream.

25. (Previously Presented) The process of Claim 24, wherein said hydrogenation catalyst includes at least one metal selected from Groups 8, 9, 10 and 11 of the Periodic Table of Elements.

26. (Previously Presented) The process of Claim 24, wherein said hydrogenation catalyst also includes a porous inorganic oxide support.
27. (Previously Presented) The process of Claim 24, wherein said oligomerization catalyst includes a solid acid catalyst.
28. (Previously Presented) The process of Claim 24, wherein the hydrogenation catalyst is contained in a first catalyst bed and the oligomerization catalyst is contained in a second catalyst bed downstream of the first catalyst bed.
29. (Canceled)
30. (Previously Presented) The process of Claim 24, wherein said hydrogenation conditions include a temperature of from about 20°C to about 180°C, a pressure of about 0 to about 500 psig (100 to 3550 kPaa), a liquid hourly space velocity of about 0.1 to about 50 hr⁻¹ and a hydrogen to butadiene molar ratio of about 1 to about 10.
31. (Previously Presented) The process of Claim 24, wherein said oligomerization conditions include a temperature of about 20°C to about 180°C, a pressure of about 0 to about 500 psig (100 to 3550 kPaa) and a liquid hourly space velocity of about 0.1 to about 50 hr⁻¹.
32. (Currently Amended) The process of Claim 27, wherein said solid acid catalyst is a crystalline molecular sieve is selected from faujasites, ZSM-5, ZSM-11, ZSM-12, ZSM-22, ZSM-23, ZSM-34, ZSM-35, ZSM-48, ZSM-50, ZSM-57, mordenite and zeolite beta.
33. (Previously Presented) The process of Claim 24, wherein said hydrogenation catalyst includes at least one metal selected from the group consisting of nickel, palladium, platinum, rhodium, ruthenium and mixtures thereof.

34. (Previously Presented) The process of Claim 24, wherein said hydrogenation catalyst also includes a porous inorganic oxide support selected from the group consisting of silica, alumina, zirconia, titania, an aluminophosphate, a clay and a crystalline molecular sieve.
35. (Previously Presented) The process of Claim 24, wherein said oligomerization catalyst includes a solid acid catalyst selected from the group consisting of crystalline molecular sieves, substituted silicates, structured polyacids, acidified resins, mixed metal oxides and sulfated zirconia.
36. (Previously Presented) The process of Claim 28, wherein said first catalyst bed and said second catalyst bed are contained in a single reactor.